within fifteen or twenty miles of the coast, I hove to at four in the morning till the day should break, and then bore up; for, although it was very hazy, we could see before us a couple of miles or so. About eight o'clock, it became so foggy that I did not like to stand in farther, and was just bringing the ship to the wind again before sending the people to breakfast, when it suddenly cleared off, and I had the satisfaction of seeing the great Sugar Loaf Rock, which stands on one side of the harbor's mouth, so nearly right ahead that we had not to alter our course above a point in order to hit the entrance of Rio. This was the first land we had seen for three months, after crossing so many seas, and being set backwards and forwards by innumerable currents and foul winds." The effect on all on board might well be conceived to have been electric; and it is needless to remark how essentially the authority of a commanding officer over his crew may be strengthened by the occurrence of such incidents, indicative of a degree of knowledge and consequent power beyond their reach.

(22.) But even such results as these, striking as they are, yet fall short of the force with which conviction is urged upon us when, through the medium of reasoning too abstract for common apprehension, we arrive at conclusions which outrun experience, and describe beforehand what will happen under new combinations, or even correct imperfect experiments, and lead us to a knowledge of facts contrary to received analogies drawn from an experience wrongly interpreted or overhastily generalized. To give an example:—every body knows that objects viewed through a transparent medium, such as water or glass, appear distorted or displaced. Thus a stick in water appears bent, and an object seen through a prism or wedge of glass seems to be thrown aside from its true place. This effect is owing to what is called the *refraction* of light; and a simple rule discovered by Willebrod Snell enables any one to say exactly *how much* the stick will be bent, and *how far*, and in what *direction*, the apparent situation of an object seen through the glass will deviate from the real